



SYLLABUS

HORT 201 - Horticulture Science and Practices

David Wm. Reed - Instructor

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Course Web Site: hort201.tamu.edu

OFFICE HOURS: Either one-on-one F2F or Zoom. Call or see me before/after class to find a time.

COURSE DESCRIPTION:

The course will cover the science and practice of plant structure, growth and development of horticultural crops; environmental effects (air, water and soil), basic principles of propagation, greenhouse and outdoor production, nutrition, pruning and chemical control of growth, pest control and branches of horticulture.

PREREQUISITES: Plant Biology or Botany preferred, but not required.

COURSE DESIGNATION: Science Core elective for all students; required for HORT major/minors.

LEARNING OUTCOMES

To recognize plant "architecture", both internal and external structure and form.

To understand basic plant "function", especially photosynthesis, respiration and hormones.

To realize how plants can measure and interact with the environment.

To develop skills to "orchestrate" plant growth with hormones, pruning, nutrition, temperature, water and soil modification.

MEETING CORE OBJECTIVES FOR LIFE/PHYSICAL SCIENCE CORE COURSES

Empirical and Quantitative Skills – mathematical problem solving and graphic interpretation on exams.

Visual Skills – Project 1 developing 3D models from 2D diagrams; or alternate presentation of narratives

Oral Skills – Project 2 developing video presenting and explaining the 3D model or alternate presentation

Written Skills – Reflective essay on a scientific principle or topic that enlightened you and led to a greater depth of understanding.

Teamwork – Project 1 and 2 are team activities.

Critical Thinking – critical thinking is central to math problems and graphic interpretation on exams, and converting 2D diagrams into 3D models, or alternate narrative information into other methods of presentation that fit different learning styles The reflective essay is designed to probe one's depth of understanding of the science of each topic.

REQUIRED TEXT: *Horticulture - Science and Practices*, D.W. Reed, Pearson Custom Publ., Edina, MN. Available at the campus and some off campus bookstores. Also available on course web site. Must be brought to all lectures, or open on your computer.

OPTIONAL TEXT: *The Biology of Horticulture*, J.E. Preece and P.E. Read, latest edition, John Wiley & Sons, Inc., NY. The text is optional. Available at the campus bookstore and some off campus bookstores.

QUIZ FILE: Several old exams are posted online for you to download. I strongly suggest you look at the old exams, so you become familiar with the format and depth of questions.

Lectures Recorded: All lectures will be Zoom recorded and posted online. Links are posted on the course website. Zoom lectures will not be live streamed; unless it is a special request and granted.

LATE ARRIVALS AND DEPARTURES:

Lecture: I realize A&M is a very large campus. Reasonable late arrivals and early departures are ok. Enter/exit quietly and sit towards the back of the class. However, lecture will start and end on time.

Exams: Will start and end on time. Exams are taken in the classroom but are taken online on your computer through Canvas. You must have a functional computer with WiFi. You can only take exams remote with permission, such as you are at home in mandatory quarantine. If you arrive late, you will have only the remaining time to take the exam and must explain why you are late. After the first student finishes the exam and departs the room, late arrivals will not be allowed to take the exam. If something beyond your control delays your arrival, call my cell 979-777-2750 immediately and we will make arrangements. Make-up exams are granted only for University acceptable excuses.

CELLULAR PHONES: It is not acceptable, appropriate, nor respectful to use your cell phone during class. If your cell phone rings during class or if you answer a phone during class, you may be asked to turn it off, and if it becomes a distraction, you may be asked to leave the classroom.

ATTENDANCE: I do not take roll, but please attend class or watch the lecture; a lot of learning occurs from hearing/watching/experiencing lecture.

NOTIFICATIONS: Official University notification of all matters is through your Howdy email. I will use only your Howdy email. Make sure you check your Howdy email, or its alias, regularly.

GRADES AND GRADING POLICY: (also see <http://student-rules.tamu.edu/rule10>):

GRADING SCHEMA

EXAMS – Multiple Choice and Core Competency questions	
100 points	Exam 1
100 points	Exam 2
100 points	Exam 3
100 points	Exam 4
100 points	Final Exam Comprehensive
400 Points Max	Drop lowest exam grade for a maximum 400 points total
TEAM and COMMUNICATION PROJECTS – Participation Marks	
Participation Marks 12 points max	Team Project 1: 3D Model or Visual Artifact (4 participation points max) Team Project 2: Video (4 participation points max) Project 3: Individual Student Reflective Essay (4 participation points max)

Grade Calculation

- **Exams:** There will be 5 100-point exams. Your lowest exam grade will be dropped.
- **Team and Communication Projects:** 12 maximum participation marks
- **Numerical average:** Sum of your highest 4 exam grades, plus participation marks, divided by 4, and rounded to the next whole number.

Grading Scale: 10-point scale, A = 90-100, B = 80-89, C = 70-79, D = 60-69, F =< 59

Final Letter Grade: Your final grade will be letter grade equivalent of your numerical average. There will be no curve or outside/extra work for extra credit.

Grades Posted: On Canvas will show your numerical grade when you finish the exam. Team Projects and Reflective Essays will be graded/posted prior to the 3rd exam.

Exams Returned: Exams questions will be available for you to view in Canvas on the posted date for each exam., usually a couple days after all make-up exams are complete.

HOW WILL EXAMS BE ADMINISTERED?

- Exams will be taken face-to-face in the classroom online on Canvas using your laptop computer or tablet. If access to a laptop or tablet is an issue, see me. You need a computer with Wi-Fi, and make sure it is charged. You cannot take the exam on a cell phone.
- You must login to Canvas You can have no other window open on your computer.

- Exams will be proctored in the classroom and monitored using the Canvas Exam Log View feature.
- If you have an excused absence, you may be granted permission to take the exam remotely. This must be arranged with the instructor ahead of time. You must have a computer with a camera and a reliable Wi-Fi connection. All make-up exams will be Zoom and Canvas proctored.
- Exams will be given during the normal lecture period, and on the dates posted on the course web site.
 - The exam will be timed by Canvas. The exam will open exactly at the normal start of lecture time and close exactly 1 hr 15 min later. If you miss this time period, then you miss the exam. If you arrive for the exam late, you must have a justified reason why. If you arrive after the first student leaves the room (usually about 15 minutes), you will not be allowed to take the exam. If something beyond your control causes you to be late, call my cell immediately at 979-777-2750 to notify me of the issue and we will discuss your situation.
 - If you miss an exam, you can only take a make-up for a University acceptable excuse, and I must be notified as per the timeline in Student Rules. See the section on Make-Up Exams later in the Syllabus. Note: forgetting you had an exam or over-sleeping are not valid excuses.
 - Technical reasons are not a University acceptable excuse. You must have a reliable computer or tablet with a camera and reliable WiFi signal. You cannot take the exam on a cell phone. If for any reason you lose internet connection, see me or call my cell immediately 979-777-2750 to notify me of the issue.
- If you are given permission to take the exams remotely, it will be closed book, taken alone with no communication with anyone, on the honor system, and proctored by me on Canvas and Zoom. If you have a question during the exam, send a personal Chat to the Proctor.
- For students that have accommodations with **Student Resources**, you take your exam at Student Resources. You can choose to take the exam with class but understand I cannot supply Accommodations.

MAKE-UP EXAMS:

Read the Student Rules (<https://student-rules.tamu.edu/rule07/>) relative to excused absences and make-up exams. Make-up exams will be given only for acceptable University excuses as defined in Student Rules. As per Student Rules 7.2.2: *“7.1.1 Unless otherwise stated in this rule, to be considered for an excused absence the student must notify the instructor in writing (e-mail is acceptable) prior to the day of absence. In cases where advanced notification is not possible, the student must provide notification by the end of the second business day after the last date of the absence. This notification must include an explanation of why notice could not be sent.”* *“7.3.1.1 The student is responsible for providing documentation substantiating the reason for the absence, including reasons stated in Section 7.2. This documentation must be provided within three business days of the last date of the absence, unless otherwise stated in this rule.”* *“7.4.1 If a student’s absence is excused, the instructor must either provide the student an opportunity to make up any quiz, exam or other work that contributes to the final grade or provide a satisfactory alternative by a date agreed upon by the student and instructor. ...Make-up work must be completed in a timeframe not to exceed 30 calendar days from the last day of the initial absence.*

It is strongly advised to talk to me directly (in person or a phone call) to inform me of the absence - Why? So, I can confirm the validity of the absence and explain your options. If possible, the make-up exam will be tentatively scheduled at the time I verify the excused absence. **Arrangements for make-up exams must be done directly with me, either in person or a phone call. I do not discuss arranging make-up exams via email or texting, unless it is an extraordinary situation.** Student Rules require that the make-up *“be completed within 30 calendar days from the last day of the absence”*. However, the exact time allowed for the make-up depends on the nature of the excused absence. My guidelines are:

- For excused absences of 1 week or less, the student is given the number of days to make-up the exam equal to the number of days of the excused absence, starting with the day of the exam. For example, if the student has an illness and an excused absence for 2 days (the day of the exam plus the next

day), then the student is allowed 2 calendar (2) days, and the make-up exam must be taken by the end of the 3rd day.

- For excuse absences beyond a week, arrangements are made case by case.
- For excused absences prior to the exam and lectures were missed but the excuse does not include the day of the exam, then contact the instructor for a case-by-case decision relative to sufficient time to view the videos of the missed lectures.
- If the excused absence is for a planned event, such as sponsored activity, interview, or field trip, then the student must take the exam before departure if feasible, or the exam can be Zoom proctored and arranged at a time on the day of the exam while on the trip. If lectures are missed, then another day may be allowed to allow the student to watch the video of the lecture; this will be decided on a case-by-case basis.

Notification of missing an exam must be by the timeline stated above, but written documentation of the excused absence can be turned-in at the time of the make-up exam. The make-up exam may be a different, but comparable exam. **Any exam missed without following the Student Rules will result in a grade of 0** (unless there are extraordinary extenuating circumstances, and in such cases, you must appeal directly to the instructor). Any unexcused missed exam will be given a grade of 0. **If all this seems confusing, that is why I want you to call me, so I can verify your excuse and explain to you the make-up options.**

Student Comments: I am extremely receptive to student comments, both positive and negative. Leave me a note on the podium or have a friend send me an email if you want to be anonymous.

Academic Integrity Statement and Policy

“An Aggie does not lie, cheat or steal, or tolerate those who do.”

“Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one’s work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case” ([Section 20.1.2.3, Student Rule 20](#)). You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at aggiehonor.tamu.edu.

Americans with Disabilities Act (ADA) Policy

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact the Disability Resources office on your campus (resources listed below) Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors as soon as possible. Disability Resources is located in the Student Services Building or at (979) 845-1637 or visit disability.tamu.edu.

Title IX and Statement on Limits to Confidentiality

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking. With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see [University Rule 08.01.01.M1](#)):

- The incident is reasonably believed to be discrimination or harassment.

- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, a person who is subjected to the alleged conduct will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University’s goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

Statement on Mental Health and Wellness

Texas A&M University recognizes that mental health and wellness are critical factors that influence a student’s academic success and overall wellbeing. Students are encouraged to engage in healthy self-care by utilizing available resources and services on your campus

Students who need someone to talk to can contact Counseling & Psychological Services (CAPS) or call the TAMU Helpline (979-845-2700) from 4:00 p.m. to 8:00 a.m. weekdays and 24 hours on weekends. 24-hour emergency help is also available through the National Suicide Prevention Hotline (800-273-8255) or at suicidepreventionlifeline.org.

LECTURE OUTLINE AND EXAM TIMING

Number Lectures	<i>Horticulture: Science and Practices, Reed</i>	<i>The Biology of Horticulture, Preece and Read</i>	Topic
PART I - BASICS OF HORTICULTURE			
1	pages 1-2	Chapter 1	Introduction and Definition of Horticulture
3	pages 3-20	Chapter 3	Plant Anatomy, Morphology & Development Vegetative & Reproductive
3	pages 21-29	Chapter 5	Plant Metabolism and Functioning Photosynthesis & Respiration
1st EXAM			
PART II - ENVIRONMENT IN HORTICULTURE			
2	pages 30-32	Chapter 11 & 12	Hormones and Growth Regulators Manipulating Plant Growth
2	pages 33-49	Chapter 6	Temperature Cardinal Temperatures, Chilling & Freezing Damage & Prevention, Stratification, Vernalization, Dormancy
2	pages 50-59	Chapter 5	Light Effects of Quantity & Quality, Light Measurement, Photoperiodism, Light Acclimatization
2nd EXAM			
2	pages 60-66	Chapter 7	Water Humidity, Precipitation, Soil Water, Irrigation Systems, Absorption Translocation, and Transpiration
2	pages 67-73	Chapter 8 & 10	Soil & Growing Medium Types, Components, Chemical & Physical Properties
2	pages 74-80	Chapter 9	Nutrition and Fertilizers Essential Elements, Functions, Deficiency Symptoms, Fertilizer Sources
3rd EXAM			
PART III- HORTICULTURAL PRINCIPLES AND PRACTICES			
2-3	pages 81-93	Chapter 4 & 14	Propagation Sexual by Seeds; Asexual by Cuttings, Layering, and Grafting; Chimeras
1	pages 94-96	Chapter 13	Growth Control Pruning Methods and Terminology, Chemical Pruning, Timing of Pruning
1	pages 97-100	Chapter 16	Pest and Pest Control Pest Control, IPM, Biological Control, Pest Types - Insects, Mites, Disease Causing Microbes, Weeds
4th EXAM			
FINAL EXAM - COMPREHENSIVE			



Team and Individual Projects to Satisfy Core Objectives

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Projects are designed to meet required Student Learning Outcomes for Life and Physical Sciences

Visual, Oral and Written Communication, Teamwork and Critical Thinking.

As such, projects are required of all students.

Team Projects:

Project 1: Visual Communication: **Design** and **create** a visual model or artifact (up to 4 points)

Project 2: Oral Communication: **Collaborate** to produce a video to **role-play teaching** and **explaining** the model or artifact (up to 4 points)

Individual Project

Project 3: Written Communication: **Write/Rewrite** a Reflective Essay on a learning experience in class or team project that allowed a greater depth of understanding. (up to 4 points)

Successful Completion of the Projects yields Participation Marks :

Participation Marks are awarded for successful completion of any or all projects (added to sum of exams grades; thus lack of participation marks cannot decrease your exam average).

Teams (Canvas Groups)

The class will be divided randomly into teams of 5-6 members. The team members must work together to complete Project 1 and 2. Team members will anonymously score each other on participation: >50% to full effort receives full participation marks, >0 and <50% effort receives half participations marks, and no participation receives no participation marks.

Change Teams

- A team member can only change teams with approval of the instructor.
- A valid reason must be presented to change teams, such as some type of critical conflict, or only one person in the group wants to participate. There cannot be one member teams.
- Team members can only change teams up to the date of Exam 2. Past this deadline you can only change teams if you can find a team that has yet to a start, they agree to accept you into their team, and I approve the change.

Pre-Review/Critique/Rewrite

Teams or individuals can submit a draft of the artifact, model or essay to the instructor to review and critique, then the team or person can prepare the final draft or model for submission. Only one critique can be sought.

Team Project 1 Visual Communication (up to 4 participation marks)

Design and create a visual model or artifact.

Complete either Option 1 or Option 2, but not both

Option 1: Convert a 2-dimensional diagram into a 3-dimensional model or artifact of an anatomical structure.

The plant anatomy and morphology lectures are based entirely on 2-dimensional drawings (pages 1-20). To demonstrate one's ability to visualize the structure in 3-dimension, the team will select any of the 2-dimensional diagrams in the text, then design and create a 3-dimensional model or artifact. The model or artifact will be scored for 3D, scientific accuracy, clarity of representation and professionalism. Team members will be graded on participation. Integrate the names of team members involved in the project directly on the artifact or submit a separate document. Names also can be entered into Canvas at the time of submission.

Submission: On behalf of the entire team, only one team member submits pics of the 3-D model to Canvas. Submit pictures of the 3-D model from several angles to show all parts in all dimensions. Pics must show all the labels clearly readable. When submitted to Canvas, list the names of the team members that were involved in the project. If you have difficulty or complications preventing submission to Canvas, you can bring directly to me the model or a USB stick that includes the file(s). DO NOT submit the file to Google docs.

Rubric

The 3D model will be scored for 3D, complete clear and professional labelling, scientific accuracy, and basically is it a reasonable representation of the actual plant part. The model can be constructed of any suitable material (paper, clay, wood, boxes, metal, styrofoam, food, containers, I even had one constructed from a half-ton round bale of hay).

The Rubric scale will be:

- 4 points – first and foremost the 3D model truly is a 3D representation of the structure, e.g., it reveals the dimensions of width, length and height (the 2-D diagrams in the book have only width and length); all parts included and properly and clearly labelled; scientifically accurate; it is a clear and reasonable representation; and appears professional and would be acceptable for a presentation.
- 2 points – the model is not 3D, some parts not present or inaccurately represented, some parts not labelled or labels not professional looking.
- 0 points – a model is not submitted, or if it is deficient in 3 or more of the above rubric grading characteristics.

Option 2: Convert Narrative information into a visual artifact that fits a visual learning style.

The team will select any topic from throughout the text that is presented as narrative and create a visual method of presentation. The artifact could be a comparison and contrast matrix (example p. 18, 29), a diagram or one PowerPoint image/slide (example page 34, 62), a virtual model, a drawing, labelled visual image, etc. The team could take a visual diagram or drawing in the text and present it in an original and uniquely different presentation. If you use PowerPoint to create the visual artifact, DO NOT submit a Power Point presentation, only one PowerPoint slide. Integrate the names of team members involved in the project directly on the artifact, pic of names on a separate document, or list names in Canvas upon submission.

Submission: On behalf of the entire team, only one team member submits to Canvas a single electronic file of the drawing, diagram, graph, pic, virtual image, PDF, single PowerPoint image/slide, or comparison and contrast matrix. The artifact must be in a file format that can be read on a standard computer with standard software. When submitted to Canvas, list the names of the team members that were involved in the project. If you have difficulty or complications submitting to Canvas, you can bring directly to me a USB stick that includes the file(s). DO NOT submit the file to Google docs.

Rubric

The artifact will be scored for learning style indicated, accurate and complete labelling, scientific accuracy, and basically is it a reasonable representation of the narrative description.

The Rubric scale will be:

- 4 points – first and foremost the narrative in the text is presented as an artifact that fits the visual learning style. The artifact has all parts properly and clearly labelled; is scientifically

accurate; it is a clear representation; and appears professional and would be acceptable for a presentation.

2 points - must be a single standalone artifact, such as a single drawing, matric or PowerPoint slide and not multiple pages or multiple slides; some parts not present or inaccurately represented, some parts not labelled or labels not professional looking.

0 points – an artifact is not submitted, or if it is deficient in at least 3 of the above rubric grading characteristics.

Team Project 2: Oral Communication (up to 4 participation marks)

Collaborate to produce a video to role-play teaching and explaining the model or artifact.

The team will prepare a short video, up to approximately 3 minutes, to present and explain their 3D model or visual artifact from Option 1 or 2. A video taken with cell phones is sufficient. Basically, consider the video as a mini lecture to a class and the team members are the teachers.

Everyone must be in the video in person. No Zoom contribution, no voice-over PowerPoint presentations, no cut and paste videos together. If you are not in the video real-time, then you cannot receive any points. The only exception is a person in forced quarantine or that has a University acceptable excused absence. And you must seek approval of the instructor to attend the presentation by Zoom. The team must be flexible and make sure times are selected when all are free. Do not wait to the last minute to make the video.

Team members must clearly introduce themselves when they start their portion of the presentation. If possible, add a name graphic to the video or wear a name tag with participating team member's names. Team members will be graded on participation.

Submission: On behalf of the entire team, only one team member submits to Canvas the video file. The video file must be under 5MB. If you have difficulty or complications submitting to Canvas, you can bring the video directly to me a USB drive. DO NOT submit the file to Google docs.

Rubric

The video will be scored for all team members with a speaking part, clarity of video and audio, visual presentation shows each speakers face and clearly shows each team member pointing to and explaining parts of the model or artifact, aspects of the model are revealed to the viewer; including all labels; and scientific accuracy:

The Rubric scale will be:

4 points – each speaker introduces themselves then presents a clear audible and visual presentation of some part of the artifact or model, all parts and angles of the model are pointed out and explained by the speakers, all comments are scientifically accurate.

2 points – speakers are not identified, the video and/or audio is not clear, the viewer cannot see all parts of the model or the artifact, the presentation is not professional or scientifically accurate, the video does not show the face of every presenter sometime in the video.

0 points - a video is not submitted, or if it is deficient in at least 3 of the above rubric grading characteristics.

Individual Project 3: Written Communication (up to 4 participation marks)

Write/Rewrite a Reflective Essay on a learning experience in class or team project that allowed a greater depth of understanding.

Each student will have the option to write a short reflective essay (200-500 words, 1-page typed max). The reflective essay can be on any science topic covered in the class or on the student's experience on team Project 1 or 2. Note, the essay is not a team project, but the essay can be written about the team experience. The reflective essay should address how the learning experience yielded a greater and more

in depth understanding of the scientific principle or artifact produced by the project. Consider how you have changed, developed or grown from the experience to come to a better understanding and/or appreciation of science.

Submission:

Each student will submit their essay as a Word document to Canvas. If you have difficulty or complications submitting to Canvas, you can bring directly to me a USB stick that includes the file. DO NOT submit the essay to Google docs.

Rubric

The essay will be scored with a standard rubric first and foremost is it reflective, for grammar, spelling, sentence structure, etc., scientific accuracy and clarity of the explanation. The essays will be worth up to 4 points.

The Rubric scale will be:

- 4 points - for an acceptable, conscientious and adequate essay that demonstrates personal reflection, expresses a greater depth of understanding, and that is grammatically correct, correct spelling, and good sentence structure, and is on a topic covered in class.
- 2 points - clearly needs improvement; is not reflective, lacks in-depth understanding of the science topic, has grammatical and spelling errors, or appears that ‘little thought’ was put into the essay.
- 0 points - if an essay is not reflective, is deemed insufficient in several of the above characteristics, is on a topic not covered in the course, or is not submitted.

Deadline for All Projects will be posted on Canvas.

Team Projects 1 and 2: The final due date will be after Exam 1 and Exam 2, and prior to 3rd Exam. Project 3 due date will be prior to Exam 4. **The exact day and time are TBA and will be posted on Canvas.** This will be a hard deadline in Canvas. Canvas will not accept projects submitted late, not even a second late. Projects can be completed and submitted any time prior to the deadline. In fact, it would be advisable to complete and submit the projects well before the deadline.

DO NOT wait until the last minute in case you have computer or Wi-Fi problems.

Project 1 and 2 – only one team member submits the project to Canvas on behalf of the entire team.

Group number and Participating team members must be specified in the submission.

Project 3 – each individual students submits their essay to Canvas. The essay must be in a document or text format.